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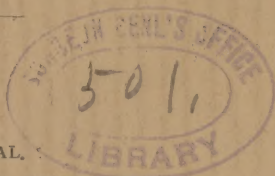
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presented by the author

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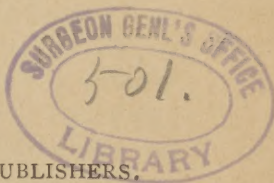
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SOME POINTS IN THE SURGICAL TREATMENT OF APPENDICITIS.

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AUGUSTUS P. CLARKE, A M., M.D.,
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Recent experiences of surgeons as well as of the general practitioner have most materially changed the teachings of the earlier views respecting the treatment of appendicitis. In those cases in which the inflammation of the appendix is of a minor degree, it may be overcome by an expectant method. Undoubtedly the larger proportion of the cases involving the additamentum coli is of this lesser grade. Such cases often arise from the presence of bacteria or bacilli, which have gained admission into the tissues in immediate connection with the intestinal tract. The symptoms occurring may be characterized by pain or tenderness, by moderate distension, marked constipation, and by disturbance of the constitution generally. Under favorable circumstances, or by rest and by the application of heat and by the admin-

istration of gentle laxatives the symptoms may subside, without exciting any grave apprehensions on the part of the patient or on the part of those who are in attendance. After intervals more or less remote there is liable to occur, from various causes, a recrudescence of the inflammation. Not unfrequently after the lapse of some few days the disease may take on retrograde processes ; in other instances, it may become so intensified as to demand prompt surgical interference for the patient's recovery. From a careful study of the histories of cases coming under my observation during a number of years past, and also from learning in many instances the final results, I feel that it is not unsafe to say that in every case in which there is reason to believe that the vermiform appendix is involved, however mild or transient the symptoms may at first appear, the surgeon or medical attendant should be on careful watch for sudden surprises or for untoward results. There is great probability in almost any event that the appendix during an attack of inflammation will become adherent to other parts in the immediate vicinity. In a case of laparotomy to which

I was called for the removal of diseased uterine appendages, I found that the vermiform appendix had become adherent to the tube and to the ovary of the right side. The appendix caeci was thickened and also indurated as the result of inflammatory processes of considerable duration. In some instances the first intimation the surgeon may have of the case will be the formation of a localized abscess ; this may occur in or near the McBarney point, between the umbilicus and the anterior superior spinous process of the ilium, or about five centimetres from that point on the ilium. The temperature in such a case is not usually very high ; it is often not more than 100° to $102\frac{1}{2}^{\circ}$. The pulse may become soft and compressible, and occasionally much more frequent than the temperature would indicate. The vomitus is of a dark or grumous substance, at times it is of a light greenish color. When the symptoms become urgent, surgical measures should immediately be instituted for relief. In many cases, if not in the most, the incision should be made over the point of greatest tenderness. This point, as before intimated, is midway between the umbilicus

and the superior spinous process of the ilium, and is usually in the right linea semilunaris. Such an incision will afford an opportunity for free drainage and for flushing the parts with warm carbolized water, or with water of the temperature of 115° to 120° , containing boracic acid or other agents that can safely be introduced into the abscess cavity. A liberal incision when timely made over the tender part has always yielded in the cases occurring in my practice an immediate and permanent result. In all cases after the incision has been made the parts should be thoroughly explored. If the appendix is within easy reach, it should be brought forward and then sewed off by means of sutures of aseptic kangaroo tendon. If, however, the appendix is bound down by firm adhesions, or, if it cannot be found without much difficulty, or without doing excessive violence to the cæcum or to other structures, it is far better to let it remain, for its presence when left will not seriously interfere with the patient's recovery. In a case to which I was called some months since, the patient, who was aged twenty years, had been suffering nine days. I made a free incision over the

tenderest point ; the operation was followed with a profuse discharge of purulent exudation. Careful search at the time was made, but the appendix could not be found. The patient, however, died next day. Extensive dissection at the autopsy revealed the fact that the appendix was drawn upward behind the cæcum, and was firmly adherent to the intestine. It required much patience to isolate and to identify it as the part for which we were in search. No portion of the intestine nor other part was found gangrenous. It is highly probable that, had the patient consented in the early stage of the attack to the operative measures, he could have been saved.

In another case to which I was called, the patient, a girl aged fourteen years, had been ill from the local symptoms for four days ; there had been much distension of the abdomen. The point of greatest tenderness was lower down than usual, but the symptoms so strongly pointed to the existence of appendicitis that a resort to operative measures was advised. An incision was made eight centimetres in length over the point of greatest tenderness, there was considerable discharge of puru-

lent and bloody exudation. The appendix was unusually long and was bifurcated, and at its junction with the cæcum it was larger than normal. The excision of the appendix was effected without much trouble; it was sewed off as in the other cases by means of the cordwainer's stitch, in which kangaroo tendon was employed. The patient made a speedy and uninterrupted recovery.

In another case to which I was called, that of Miss G., aged thirteen years, the symptoms had been in progress upward of four weeks. The attending physician had early diagnosticated the case as one of appendicitis, and after consultation with another practitioner had advised a resort to surgical measures. The symptoms, however, soon became so much easier, that the operation was deferred. After the lapse of some days there was a sudden return of the graver symptoms. At this time I was called to see the case. The parents now declined the proposition for any operative interference unless they could be positively assured of ultimate success. Nothing then remained to be done but the adoption of an expectant method. For some days the

patient was nourished solely by enemas of beef juice, brandy and beef peptonoids. After that the patient was able to take by the mouth small quantities of malted milk and beef essence. Morphia and other sedatives in small quantities frequently repeated were employed. Under this régime the pain was kept under control, the vomiting almost entirely ceased, the abdominal distension markedly lessened, though there was probably suppuration going on at the McBurney point. The father still refused a resort to operative interference. Though the patient was so much relieved, the temperature was at times somewhat above the normal. On the thirteenth day from the adoption of the expectant method the patient experienced an unfavorable return of the symptoms. She died from sudden collapse on the following day, which was the forty-second from the apparent onset of the disease. In the treatment of this case the patient had the opportunity to try the benefit of the expectant method carried out from the first in the most approved manner. Had an operation been undertaken in the early stage of the inflammation the patient would undoubtedly have recovered.

At no time after I was called did it seem that an operation could have offered much chance for relief, owing to the excessive emaciation and to the other unfavorable phases which the disease had assumed.

If consent had been obtained, I should nevertheless have given the patient the benefit of an exploratory incision. When an operation in the early stage of the inflammation is undertaken, there will be but little difficulty experienced in the removal of the appendix; of course, after adhesions are formed the danger is increased. In all cases the wound should be kept in an aseptic condition. If an abscess has formed, the cavity should be irrigated or flushed with a warm medicated solution. When the appendix is not easily reached, or is bound down behind the cæcum, the safer method, as before stated, will be to let it remain, and not to make any extended search, or dissection, especially after suppuration has taken place. When the mesentery or other structures have been sufficiently detached, the appendix should not be tied but should be clamped, and then should be sewed off by means of cartolized animal sutures. As soon as all

bleeding points have been controlled, the appendix should be incised about two centimetres from the cæcal tissue. In order to prevent adhesions of the stump or base of the pedicle to other parts, the peritoneal tissue in immediate vicinity of the marging of the incision should be closely approximated by a subperitoneal or by a Lembert suture. The smaller sized kangaroo tendon rendered aseptic should preferably be the material for such use. A thorough closure of the peritoneal surface of the wound thus effected will not only obviate the occurrence of agglutination of the parts, but will also help to prevent the escape into the peritoneum of septic matter that may gravitate toward this point, and thus to preclude the occurrence of a fistulous tract. The entire wound should as far as possible be kept in an aseptic condition. Aristol and iodoform will be found to be excellent adjuvants in accomplishing this result. The danger of the subsequent occurrence of hernia may be overcome by paying careful attention to the closure of the severed parts that have been divided in the operation ; the peritoneum, the mus-

cular tissue, the fascia and the external integument should each be brought together separately.

Carbolized animal sutures should be used for this purpose. Entire closure of the wound by the first intension can be effected only in those cases in which the operation has been undertaken in the early stage of the attack. After the formation of an abscess, complete union at first cannot be expected to result, because some method for maintaining drainage for a while will have to be employed. Some operators recommend that, after the appendix has been incised, the stump should be disinfected with a small pointed cautery. In cases in which the appendix has become gangrenous, or in which there has been sloughing or marked septic processes going on, such a method of procedure may do no harm; but in those cases in which it is desirable to achieve immediate union of the tissues, cauterization may cause further sloughing and exudation that will delay cicatrization. In most cases, disinfection with 1 to 1000 or to 2000 mercuric bichloride solution and the liberal use of aristol and iodoform will be more con-

ductive to this end, and be a far safer practice to adopt. The different steps of the operation are much complicated when there is present an unusual abdominal distension ; so also it will be in cases in which there is excessive or marked obesity. In one case to which I was called, though the distension was not uncommon, expulsion of the intestines began as soon as a moderate incision was made ; the employment of the Trendelenburg posture, however, overcame the complication, and enabled me to complete the operation without further inconvenience. The advantage of Trendelenburg's position in all cases of abdominal section for intestinal affections cannot be overestimated. In those cases in which some means for drainage becomes necessary, every detail in the treatment should receive the utmost attention, for if there should occur any hindrance to a free discharge of the exudation, a risk of a dangerous sepsis to the organism will be incurred. In every such case of abdominal section when a drainage tube has been employed, the possibility of the occurrence of hernia should not be overlooked. In all cases, whether the drainage tube has been required or not, a

firm binder or a thorough bandaging should be employed ; the patient for some weeks should be kept for the most part in the horizontal position. As already intimated, an abdominal section with the removal of the appendix, in the early stages of the inflammation, is most likely to be followed with favorable results. In the initial stage of many of the milder cases the medical attendant often hesitates, or shrinks from assuming the responsibility of undertaking operative measures : he rather indulges in the hope that the case will ultimately take on a more favorable aspect. It is true that in some cases there will be for a while considerable improvement, which will lead to the thought that the patient may finally recover. In other cases there is an evident fear on the part of medical attendants that the diagnosis may be incorrect, or that the symptoms are dependent on the presence of uncertain factors. Such a conclusion, however, at the present day should not obtain when it is considered that our increasing experience will enable us to decide most accurately in reference to the elimination of the existence of other possible causes.

Assuming that our diagnosis is occasionally incorrect, the dangers of an exploratory incision are infinitely less than would result from allowing the symptoms to progress without availing ourselves of the advantages of an abdominal section, which in most cases is in any event, when properly carried out, a comparatively harmless procedure. The question often arises: should the surgeon, when called upon in the later stages of a case, advise operative interference? In answer to this it may be remarked that our experience is favorable to the adoption of an exploratory incision. When an operation is undertaken in the later stages, the patient must of course assume more risks, for the chances of recovery are much less than when an operation is attempted much earlier, though surgical measures at such late date may prevent the rupturing of an abscess into the peritoneal cavity. When there has been such a rupture, removal of the pus and cleansing of the parts may afford an opportunity for a retrograde process of the disease to take place. Nothing, therefore, but the occurrence of extreme collapse should weigh against the employment of operative mea-

tures. Some surgeons have advised that when the existence of peritonitis has become somewhat diffused, it should be regarded as a bar to the adoption of surgical treatment. It should, however, be remembered that the implication of the peritoneum may be dependent in any case on the presence of lesions that may have their origin at a distant point, and that the removal of the cause of such morbid processes may effect a speedy subsidence of the peritoneal inflammation. A peritoneal inflammation should always, according to the light afforded by recent pathological investigations, be considered only as a secondary affection to other processes that have had a more or less continuance.

Before closing this paper, I deem it important to say that in those cases of appendicitis which have gone on to suppuration before operative measures have been undertaken, there may occur secondary abscesses in other parts of the abdominal cavity. An operation to insure relief must therefore embrace a course of procedure that will afford a free discharge to all accumulations of purulent exudation. It will sometimes be necessary to make an extensive dissection at

different parts, and also to overcome adhesions of an unusual extent. Great care will also have to be exercised, lest an opening be made into an adherent intestinal mass. In some instances, portions of the epiploon may become gangrenous ; there may occur in the veins of the abdomen an inflammation that may extend outward to the femoral and to other veins. In carrying out for these complications the necessary surgical treatment, much judgment will have to be exercised and much precaution taken that the dissection or search be not prolonged beyond what may afterward prove to be a beneficial or safe proceeding.

